

- 1        1. A printer for printing time-based media, the printer comprising:  
2            a communication interface for receiving time-based media data from a media  
3            source;  
4            a processor for performing a multimedia function on the time-based media  
5            data to obtain an electronic image and associated print data;  
6            a user interface, communicatively coupled to the processor, including:  
7                a display, for providing data to a user;  
8                an input device, for receiving data from the user;  
9            a first output device for receiving the associated print data from the processor  
10            and producing output on a printer; and  
11            a second output device coupled to the processor for receiving the electronic  
12            image and producing an electronic output from the image.
  
- 1        2. The printer of claim 1 wherein the multimedia function includes selecting  
2            a range of audio data in response to received input from the user.
  
- 1        3. The printer of claim 1 wherein the multimedia function includes applying  
2            audio event detection to the time-based media data.
  
- 1        4. The printer of claim 3 wherein the multimedia function further includes  
2            determining a confidence level associated with the audio event detection.
  
- 1        5. The printer of claim 1 wherein the multimedia function includes applying  
2            a speaker segmentation function to the time-based media data.

1        6. The printer of claim 1 or 5 wherein the multimedia function includes  
2        applying a speaker recognition function to the time-based media data.

1        7. The printer of claim 1 wherein the multimedia function includes applying  
2        a sound source localization function to the time-based media data.

1        8. The printer of claim 7 wherein the multimedia function further includes  
2        applying audio event detection to the time-based media data.

1        9. The printer of claim 1 wherein the multimedia function includes applying  
2        a speech recognition function to the time-based media data.

1        10. The printer of claim 9 wherein the multimedia function includes  
2        applying a profile analysis function to the time-based media data.

1        11. The printer of claim 9 wherein the multimedia function includes  
2        applying an audio event detection function to the time-based media data.

1        12. The printer of claim 11 wherein the multimedia function further includes  
2        applying a speaker recognition function to the time-based media data.

1        13. The printer of claim 11 wherein the multimedia function further includes  
2        applying a speaker segmentation function to the time-based media data.

1        14. The printer of claim 11 wherein the multimedia function further includes  
2        applying a sound localization function to the time-based media data.

1        15. The printer of claim 1 wherein the multimedia function includes selecting  
2        a range of video data in response to received input from the user.

1        16. The printer of claim 1 wherein the multimedia function includes  
2        applying a video event detection function to the time-based media data.

1        17. The printer of claim 1 wherein the multimedia function includes  
2        applying a color histogram analysis function to the time-based media data.

1        18. The printer of claim 1 wherein the multimedia function includes  
2        applying a face detection function to the time-based media data.

1        19. The printer of claim 18 wherein the multimedia function includes  
2        applying a clustering function to the time-based media data to merge multiple  
3        instances of a face into a representative face image.

1        20. The printer of claim 1 wherein the multimedia function includes  
2        applying a face recognition function to the time-based media data.

1        21. The printer of claim 1 wherein the multimedia function includes  
2        applying an optical character recognition function to the time-based media data.

1        22. The printer of claim 21 wherein the multimedia function further includes  
2        applying a clustering function to the time-based media data to merge similar results  
3        of the optical character recognition.

1        23. The printer of claim 1 wherein the multimedia function includes  
2        applying a motion analysis function to the time-based media data.

1        24. The printer of claim 1 or claim 23 wherein the multimedia function  
2        includes applying a distance estimation function to the time-based media data.

1        25. The printer of claim 1 wherein the multimedia function includes  
2        applying foreground/background segmentation function to the time-based media  
3        data.

1        26. The printer of claim 1 wherein the multimedia function includes  
2        applying a scene segmentation function to the time-based media data.

1        27. The printer of claim 26 wherein the multimedia function further includes  
2        applying a face recognition recognition function to the time-based media data.

1        28. The printer of claim 26 wherein the multimedia function further includes  
2        applying a face detection function to the time-based media data.

1        29. The printer of claim 26 wherein the multimedia function includes  
2        applying an optical character recognition function to the time-based media data.

1        30. The printer of claim 29 wherein the multimedia function further includes  
2        applying a face recognition function to the time-based media data.

1        31. The printer of claim 29 wherein the multimedia function includes  
2        applying a face detection function to the time-based media data.

1       32. The printer of claim 1 wherein the multimedia function includes  
2       applying an automobile recognition function to the time-based media data.

1       33. The printer of claim 32 wherein the multimedia function further includes  
2       applying a motion analysis function to the time-based media data.

1       34. The printer of claim 1 wherein the multimedia function includes  
2       applying a license plate recognition function to the time-based media data.

1       35. The system of claim 1 wherein the multimedia function includes  
2       applying a visual inspection function to the time-based media data.

1       36. The printer of claim 1 wherein the user interface is configured to allow a  
2       user to control a compact disc (CD) device.

1       37. The printer of claim 1 wherein the user interface is configured to allow a  
2       user to control a digital video disc (DVD) device.

1       38. The printer of claim 1 wherein the user interface is configured to allow a  
2       user to control an audio tape device.

1       39. The printer of claim 1 wherein the user interface is configured to allow a  
2       user to control a video tape device.

1       40. The printer of claim 1 wherein the user interface is configured to allow a  
2       user to control a multimedia server.

1        41. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control encryption hardware.

1        42. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control audio sound localization hardware.

1        43. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control motion detection hardware.

1        44. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a MIDI player.

1        45. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a cellular telephone.

1        46. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a two-way radio.

1        47. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a world wide web display.

1        48. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a climate sensor.

1        49. The printer of claim 1 wherein the user interface is configured to allow a  
2    user to control a radio receiver.

1        50. The printer of claim 1 wherein the processor is further configured to  
2        display results of the multimedia function on the display of the user interface.

1        51. The printer of claim 1 wherein the second output device is a DVD drive.

1        52. The printer of claim 1 wherein the second output device is a CD drive.

1        53. The printer of claim 1 wherein the second output device is an audio tape  
2        drive.

1        54. The printer of claim 1 wherein the second output device is a video  
2        cassette device.

1        55. The printer of claim 1 wherein the second output device is a removable  
2        media device.

1        56. The printer of claim 1 wherein the second output device is an embedded  
2        audio recorder.

1        57. The printer of claim 1 wherein the second output device is an embedded  
2        video recorder.

1        58. The printer of claim 1 wherein the second output device is a non-volatile  
2        storage device.

1        59. The printer of claim 1 wherein the second output device is an embedded  
2        multimedia server.

1        60. The printer of claim 1 wherein the second output device is audio  
2        encryption hardware.

1        61. The printer of claim 1 wherein the second output device is video  
2        encryption hardware.

1        62. The printer of claim 1 wherein the second output device is audio sound  
2        localization hardware.

1        63. The printer of claim 1 wherein the second output device is a cellular  
2        telephone.

1        64. The printer of claim 1 wherein the second output device is a two-way  
2        radio.

1        65. The printer of claim 1 wherein the second output device is a world-wide  
2        web display.

1        66. The printer of claim 1 wherein the second output device is a radio  
2        receiver for receiving AM signals.

1        67. The printer of claim 1 wherein the second output device is a radio  
2        receiver for receiving FM signals.

1        68. The printer of claim 1 wherein the second output device is a radio  
2        receiver for receiving short wave signals.

1        69. The printer of claim 1 wherein the second output device is a satellite  
2        radio receiver.

1        70. The printer of claim 1 wherein the second output device is a weather alert  
2        receiver.

1        71. The printer of claim 1 wherein the second output device is an emergency  
2        alert monitor for receiving emergency broadcast system alerts.

1        72. The printer of claim 1 wherein the second output device is hardware for  
2        performing VGA screen captures.

1        73. The printer of claim 1 wherein the second output device is hardware for  
2        performing audio capture.

1        74. The printer of claim 1 wherein the second output device is hardware for  
2        capturing data from an electronic pen.

1        75. The printer of claim 1 wherein the second output device is a disposable  
2        media writer.

1  
2        76. The printer of claim 1 wherein the second output device is a flash  
3        memory device.

1        77. The printer of claim 1 wherein the second output device is a wireless  
2        device.

1        78. A method for printing time-based media, the method comprising:  
2            receiving time-based media data from a media source;  
3            receiving user input, the user input specifying a multimedia function to  
4            perform on the time-based media;  
5            performing the specified multimedia function on the time-based media data  
6            to obtain an electronic image and associated print data;  
7            producing output on a printer from the associated print data from the  
8            processor and; and  
9            producing an electronic output from the electronic image.

1        79. The method of claim 78 wherein the multimedia function includes  
2        selecting a range of audio data in response to received input from the user.

1        80. The method of claim 1 wherein the multimedia function includes  
2        applying audio event detection to the time-based media data.

1        81. The method of claim 80 wherein the multimedia function further  
2        includes determining a confidence level associated with the audio event detection.

1        82. The method of claim 78 wherein the multimedia function includes  
2        applying a speaker segmentation function to the time-based media data.

1        83. The method of claim 78 or 82 wherein the multimedia function includes  
2        applying a speaker recognition function to the time-based media data.

1        84. The method of claim 78 wherein the multimedia function includes  
2        applying a sound source localization function to the time-based media data.

1        85. The method of claim 84 wherein the multimedia function further  
2    includes applying audio event detection to the time-based media data.

1        86. The method of claim 78 wherein the multimedia function includes  
2    applying a speech recognition function to the time-based media data.

1        87. The method of claim 86 wherein the multimedia function includes  
2    applying a profile analysis function to the time-based media data.

1        88. The method of claim 86 wherein the multimedia function includes  
2    applying an audio event detection function to the time-based media data.

1        89. The method of claim 88 wherein the multimedia function further  
2    includes applying a speaker recognition function to the time-based media data.

1        90. The method of claim 88 wherein the multimedia function further  
2    includes applying a speaker segmentation function to the time-based media data.

1        91. The method of claim 88 wherein the multimedia function further  
2    includes applying a sound localization function to the time-based media data.

1        92. The method of claim 78 wherein the multimedia function includes  
2    selecting a range of video data in response to received input from the user.

1        93. The method of claim 78 wherein the multimedia function includes  
2    applying a video event detection function to the time-based media data.

1           94. The method of claim 78 wherein the multimedia function includes  
2   applying a color histogram analysis function to the time-based media data.

1           95. The method of claim 78 wherein the multimedia function includes  
2   applying a face detection function to the time-based media data.

1           96. The method of claim 95 wherein the multimedia function includes  
2   applying a clustering function to the time-based media data to merge multiple  
3   instances of a face into a representative face image.

1           97. The method of claim 78 wherein the multimedia function includes  
2   applying a face recognition function to the time-based media data.

1           98. The method of claim 78 wherein the multimedia function includes  
2   applying an optical character recognition function to the time-based media data.

1           99. The method of claim 98 wherein the multimedia function further  
2   includes applying a clustering function to the time-based media data to merge  
3   similar results of the optical character recognition.

1           100. The method of claim 78 wherein the multimedia function includes  
2   applying a motion analysis function to the time-based media data.

1           101. The method of claim 78 or claim 100 wherein the multimedia function  
2   includes applying a distance estimation function to the time-based media data.

1           102. The method of claim 78 wherein the multimedia function includes  
2   applying foreground/background segmentation function to the time-based media  
3   data.

1           103. The method of claim 78 wherein the multimedia function includes  
2   applying a scene segmentation function to the time-based media data.

1           104. The method of claim 103 wherein the multimedia function further  
2   includes applying a face recognition recognition function to the time-based media  
3   data.

1           105. The method of claim 103 wherein the multimedia function further  
2   includes applying a face detection function to the time-based media data.

1           106. The method of claim 103 wherein the multimedia function includes  
2   applying an optical character recognition function to the time-based media data.

1           107. The method of claim 106 wherein the multimedia function further  
2   includes applying a face recognition function to the time-based media data.

1           108. The method of claim 106 wherein the multimedia function includes  
2   applying a face detection function to the time-based media data.

1           109. The method of claim 78 wherein the multimedia function includes  
2   applying an automobile recognition function to the time-based media data.

1           110. The method of claim 109 wherein the multimedia function further  
2   includes applying a motion analysis function to the time-based media data.

1           111. The method of claim 78 wherein the multimedia function includes  
2   applying a license plate recognition function to the time-based media data.

1           112. The method of claim 78 wherein the multimedia function includes  
2   applying a visual inspection function to the time-based media data.